

1. A magnetic head comprising:
 - 2 an electrical contact pad;
 - 3 a substrate on which the magnetic head is formed; and
 - 4 a material selected to have a low dielectric constant interposed between
 - 5 the pad and the substrate.
- 6
7. The magnetic head of claim 1, wherein the low dielectric material is
- 8 configured to decrease the parasitic capacitance of the magnetic head.
- 9
10. The magnetic head of claim 1, further comprising a stud formed through
- 11 the low dielectric material.
- 12
13. The magnetic head of claim 3, wherein the stud comprises Cu.
- 14
15. The magnetic head of claim 3, wherein the stud comprises a conductive
- 16 material.
- 17
18. The magnetic head of claim 1, wherein the low dielectric material
- 19 comprises hard-bake photo resist.
- 20
21. The magnetic head of claim 1, wherein the low dielectric material
- 22 comprises SiO₂.
- 23
24. The magnetic head of claim 1, wherein the low dielectric material has a
- 25 thickness in a range of between about 1 μm and about 100 μm.
- 26
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1 9. The magnetic head of claim 1, wherein the low dielectric material has a
2 thickness in a range of between about 10 μm and about 50 μm .

3
4 10. The magnetic head of claim 1, wherein the low dielectric material has a
5 thickness of about 20 μm .

6
7 11. The magnetic head of claim 1, wherein the low dielectric material has a
8 dielectric constant of less than about 9.

9
10 12. The magnetic head of claim 1, wherein the low dielectric material has a
11 dielectric constant of about 3.

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13 13. The magnetic head of claim 1, wherein the magnetic head carries a GMR
14 sensor.

15
16 14. The magnetic head of claim 1, wherein the low dielectric material provides
17 a platform for the electrical contact pad.

18
19 15. The magnetic head of claim 1, wherein an electrical contact pad having a
20 surface area of less than about 20 μm in order to reduce capacitance coupling with the
21 substrate.

- 1 16. A reduced capacitance magnetic head comprising:
2 an electrical contact pad;
3 a substrate on which the magnetic head is formed;
4 a conducting layer formed over the substrate;
5 a low dielectric material interposed between the pad and the substrate
6 which is used as a platform for the electrical contact pad to increase the distance
7 between the substrate and the electrical contact pad, the low dielectric material
8 comprising hard bake photo resist and having a thickness of about 20 μm and a
9 dielectric constant of about 3; and
10 a conducting stud formed through the low dielectric material to make
11 electrical connection between the electrical contact pad and the conducting layer.
- 12
- 13 17. A disk drive system, comprising:
14 a reduced capacitance magnetic head comprising:
15 an electrical contact pad;
16 a substrate on which the magnetic head is formed;
17 a material selected to have a low dielectric constant interposed between
18 the pad and the substrate; and
19 a magnetic recording disk;
20 a spin-valve sensor for reading data recorded on the recording disk; and
21 an actuator for moving the spin valve sensor across the magnetic recording disk in
22 order for the spin-valve sensor to access different magnetically recorded data on the
23 magnetic recording disk; and
24 a detector electrically coupled to the spin-valve sensor and configured to detect
25 changes in resistance of the sensor caused by rotation of the magnetization of the sensing
26 layer relative to the fixed magnetizations of the pinned layer in response to changing
27 magnetic fields induced by the magnetically recorded data.

- 1
- 2 18. The disk drive system of claim 17, further comprising a stud formed
- 3 through the low dielectric material.
- 4
- 5 19. The disk drive system of claim 17, wherein the low dielectric material is
- 6 configured to decrease the parasitic capacitance of the magnetic head.
- 7
- 8 20. The disk drive system of claim 17, wherein the low dielectric material has
- 9 a thickness in a range of between about 10 μm and about 50 μm .
- 10
- 11 21. The disk drive system of claim 17, wherein the magnetic head comprises a
- 12 GMR sensor.
- 13
- 14 22. A reduced capacitance magnetic head comprising:
15 a substrate on which the magnetic head is formed; and
16 a contact pad disposed above the substrate and having a surface area less
17 than about 20 μm in order to reduce capacitance coupling with the
18 substrate.
- 19
- 20 23. A magnetic head comprising:
21 a substrate on which the magnetic head is formed;
22 an alumina undercoat layer comprising Al_2O_3 formed over the substrate;
23 an electrical contact pad; and
24 a layer of alumina interposed between the electrical contact pad and the
25 alumina undercoat layer.
- 26
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1 24. A magnetic head comprising:
2 a substrate on which the magnetic head is formed;
3 an alumina undercoat layer comprising SiO₂ formed over the substrate;
4 an electrical contact pad; and
5 a layer of alumina interposed between the electrical contact pad and the
6 alumina undercoat layer.

7
8 25. A method of reducing capacitance in a magnetic head, comprising:
9 providing a substrate;
10 providing a read/write head; and
11 isolating the read/write head from the substrate in order to reduce the
12 capacitance coupling between the read head and the substrate.